

Architecture Tools: A Repository. An architecture repository is required to manage and assure the quality and timeliness of the architecture content. Quality content establishes architecture worthiness, demonstrates value, and fosters commitment.

META Trend: By 2003, enterprise architecture modeling, including business, information, application, and domain architectures, will be the primary function of a new role called the “business technologist.” These individuals will employ a series of object-oriented models — business, information, architecture, analysis, design, test, and code — and will leverage an emerging critical mass of tools and techniques centered on Universal Modeling Language and use-case analysis methods.

Architecture teams intent on delivering comprehensive, understandable, and useful information will produce architecture deliverables in both textual and graphical format and publish these on a Web site (see EAS Delta 22, 17 Aug 1998). Our research shows that usable access to architecture information is key to consistent application of the architecture and raises the perceived value of the architecture process in the enterprise. Beyond this, the goal of the architecture team must be to provide answers to “what-if” scenarios in an effort to integrate architecture content within business-driven collateral (e.g., strategic plans, project charters, business cases). To achieve this goal, we believe architecture teams must avoid a long-term strategy of functionally overloading office automation (OA) tools and instead must focus attention on the acquisition of an architecture repository. By 2000, 10% of companies with an established architecture process will make this investment. By 2001, this will grow to 40% as senior business management demands for architecture-related information spur tool acquisition. By 2002/03, 75% of architecture teams will acquire a repository as a foundation investment for enterprise architecture activities.

Architecture Repository: Selection Criteria — Vendors. Vendors should be measured based on several criteria (see Figures 1 and 2 in Addendum). Users should seek vendors that have committed to a market-focus of customer intimacy versus product leadership. The vendor’s disposition to treat the sale of its product as the start of a “solutions” relationship rather than a

race for technology obsolescence will match the evolutionary cycles of an architecture process.

Architecture Repository: Selection Criteria—Tools. Repository tools should be evaluated using the following criteria (see Figure 3 in Addendum for additional criteria):

- Customizable relational or object-oriented metamodel — is it exposed or hidden?
- Vendor or third-party-provided library of industry “templates” (e.g., flowchart symbols, UML objects, drawings)
- Multiple data exchange formats for input/output of text data (e.g., CSV, SQL, DCOM, CORBA, OLE, HTML, DCE, PCTE, CDIF); sophisticated tools to provide data integrity/consistency checks and revision/audit reporting on imported data
- Multiple “states” to support views of time-based architecture (e.g., current, current + n, future)
- Export of graphical information either encompassing common image formats (e.g., JPEG, GIF, WMF, BMP, HTML) or accompanying vendor-supplied “viewer” shareware — avoiding the

Business Impact

Enterprise architects must establish a simple, standard way to store their knowledgebases and business processes. This will enable wider business-unit participation in new IT-oriented initiatives.

need to purchase additional tool licenses for “read-only” users

- Adaptability, interoperability (e.g., with CASE, systems management, office/productivity tools), and comprehensiveness without sacrificing ease of use — favoring tools that support both the current and desired architecture process maturity level (see Figure 4 in Addendum)

Pilot Project. A project, business, or IT manager that can immediately benefit from having access to either current- or future-state architecture should be identified along with the information and types of diagrams/reports that satisfy their needs (see Figure 5 in Addendum).

Sample Analytics for Project Managers. For technology exit projects, diagrams and reports about the location of equipment, production application systems, and the business processes affected should be provided. An interface inventory to show linkages and dependencies between systems and with external partners/vendors should also be prepared. For code renovation projects, diagrams and reports illustrating the major inbound interfaces that are outside the scope of the project should be provided (including their transmission frequency, volume, and source). Project managers should include assumptions about stability of these interfaces in the project charter. Application system reports that demonstrate size and complexity of the project scope should be included. For example:

- **Lines of code** — Sizing/complexity, project risk assessment, task duration
- **System software** — Resource skills, project-team size
- **Number of input files, file record size** — Capacity plans, unit testing requirements

- **Number of batch jobs/job scheduling** — Complexity, systems dependencies, systems integration testing requirements

Sample Analytics for IT Development and Operations Managers. Application and infrastructure diagrams that flag systems “at risk” and in need of remedial action (e.g., highest number of problem tickets/longest duration of “open” tickets) should be prepared. Leveraging a link to the incident reporting system provides a proactive measure for IT managers to handle/address issues and avoid cascading defects. Developing diagrams and reports that delineate which IT managers are responsible for pieces of infrastructure and where dependencies exist enables the appropriate people to be contacted to solve problems, address plans, and generally optimize getting work done.

Sample Analytics for Business Managers. Business resumption planning (a.k.a. disaster recovery), readiness assessment, and testing activities benefit from being apprised of changes in the implemented infrastructure. Diagrams and reports should be produced to keep managers of these functions abreast of technology changes as they apply to the various business processes, business locations, and personnel. Line-of-business managers should understand the production systems and technology that support their business processes using diagrams and reports. This is extremely important for outsourced technology to show which person is responsible for the infrastructure components. Diagrams and reports can be enhanced with documented escalation procedures and contact information.

Bottom Line

Graduating from basic office automation products to a comprehensive architecture repository is achieved along a functional continuum. Moreover, it is a derivative of matching tool capabilities and requirements with architecture process maturity, establishing organization readiness to participate in developing the tool’s underlying metamodel, and rigorously applying architecture in IT investment decision making.



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Figure 1 — Vendor Selection Criteria

- Number of installed licenses
- Number of years in business
- Product development history ("roots")
- Support channels (customer service, fax-back, Internet)
- Number of support/training staff
- Business locations
- Training offerings (custom on-site, classroom, Internet)
- Partnerships/alliances
- Product revision cycle and policies for legacy support
- Product pricing
- International presence
- Target market
- Willingness to offer evaluation copy of product
- Percentage of staff involved in R&D activity
- Current market position
- Company use of tool as part of its "enterprise architecture" consulting practice

Source: META Group

Figure 2 — Sample Architecture Tools

Vendor	Product	URL
IDS Scheer	Aris	www.ids-scheer.com
SES Holdings	Boma	www.sesh.com
SAP	Business Engineer	www.sap.com/products/index.htm
Hewitt Assoc.	Client/Server Atlas	
Sterling Software	Cool:Biz/Cool:Gen	www.sterling.com/products/cool.html
CaseWise Inc.	Corporate Modeler	www.casewise.com
Cimax Int'l	DComp	www.cimax.com
VIT	Delivery Manager	www.vit.com/frames/products.html
Baan	Dynamic Enterprise Modeling	www.baan.com
Ptech	Enterprise FrameWork	www.ptechinc.com/products.htm
Platinum	BPwin	www.platinum.com/products/appdev/emrc/buspmo.htm
NCR	Metis	www3.ncr.com/service/wsivteap.htm
IntelliCorp	LiveModel	www.intellicorp.com/livemodel.html
	Business Visualizer	www.intellicorp.com/businessvisualizer.htm
SilverRun	Relational Data Modeler	www.silverrun.com/product/rdm/erdm.html
Viasoft	Rochade	www.viasoft.com/product_services/products/repository/rochade.html
Rational	Rational Rose	www.rational.com
Framework Software	Structure	www.frameworksoft.com
Popkin	System Architect	www.popkin.com
Visio	Visio Professional	www.visio.com/professional/index.html
	Visio Enterprise	www.visio.com/products/enterprise/index.html

Source: META Group

Figure 3 — Additional Tool Selection Criteria

Additional tool selection criteria are as follows:

- Level/type of integration with Office (e.g., word processor, spreadsheet) and productivity (e.g., e-mail, project planning) tools
- Integration with systems management tools (e.g., version control, change management, job scheduling)
- Diagnostics reporting (e.g., data integrity, self-repair on corrupt databases) and error handling/reporting
- Support for multiple production and development environments (e.g., Unix, Windows 98/NT, Solaris, OS/2, Dynix, MVS, Linux)
- Levels of security based on profiles (e.g., user, group) and extended to tool processes, events, and data
- Support for multiuser environments
- Content administration processes (e.g., software configuration management, version control, activity statistics, audit reports)
- Ease in learning and using (e.g., should not be complex and demand an internal support structure)

Source: META Group

**Figure 4 — Maturity Levels**

Level 1: Initial — No Architecture to Speak Of. Numerous organizations are at the SEI model's initial state of architecture development. Little architecture process may be in place, outside of a handful of standards for desktop systems, servers, or database management systems. No formal architecture processes are in place, though there may be several informal processes that declare product standards. There is no unified architecture development process across technologies and lines of business. There is no explicit linkage to business issues in the technology standards that do exist. Moving out of this stage requires establishing an architecture team, tasked with developing an architecture process that is repeatable within the enterprise. Linkages to business leaders and to the IT leadership team must be established and used to drive credibility for the architecture development effort.

Level 2: Repeatable — An Architecture Process Exists. Companies emerging from the chaos of Level 1 and moving into Level 2 will have an informal process for developing the architecture components. There will be established gates through which technology acquisition choices must pass. There will also be implicit linkages to business issues, mostly characterized as "reducing total cost of ownership." The architecture process may not be repeated regularly, but occasionally is resurrected to address some technological deficiency in the organization. To advance to the next stage, the architecture process needs to be more completely defined and executed consistently across the enterprise. The architecture process must develop clear roles and responsibilities, including managed governance of application delivery in accordance with the architecture.

Level 3: Defined — Consistent Process Consistently Applied. At Level 3, the process for developing the architecture is well defined/communicated and largely followed. The architecture deliverables are linked to business issues, not just technology engineering or operations issues. The enterprisewide technical architecture process is executed at regular intervals to refresh the architecture content. Application delivery is linked to architecture deliverables, providing review of application projects against the architecture standards. Deviations from the architecture are fed back into the architecture development process. To move to the next stage, process cycle times and quality parameters must be captured and measured.

Level 4: Managed — Measured Process Parameters. Quality metrics associated with the architecture process are captured and measured at Level 4. These metrics include the cycle times necessary to generate architecture revisions, technical environment stability, and time to market for application delivery using the componentry of the architecture (from concept through deployment to end users). Although these processes are being measured, it is the feedback from these measurements into process optimizations that moves the architecture process to Level 5.

Level 5: Optimizing — Process Metrics Drive Process Improvements. Processes at the optimizing level use metrics gathered at Level 4 to drive continuous process improvements. We have not identified architecture efforts in the Global 2000 that could be described as Level 5.

Source: META Group

Figure 5 — Requirements for a Pilot Project

After the information and type of report/diagram is determined, if necessary, sample diagrams should be created to illustrate what information can be captured and how the diagrams inter-relate. It should be demonstrated that an architecture “artifact” is viewed from multiple perspectives. Constraints on the maximum level of detail with demonstrable correlation between depth and cost of ownership of the architecture models should be provided. For example, the closer to “implementation” a piece of information becomes (e.g., system→application→module→line of code), the more work is required in keeping this information current. The law of diminishing returns and real needs of the organization will dictate exactly how much detail should be captured and maintained. It is important to find a project sponsor willing to drill down on a limited scope of the enterprise to test the value-add of capturing and keeping detail information. Over time, testimonials from satisfied architecture “customers” should be gathered and communicated on the architecture Web site.

Source: META Group